

Docket JP919990715US1

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Appl. No.: 09/438,645

Filed: November 12, 1999

**IN THE CLAIMS**

A set of all pending claims is set out immediately below marked up to indicate changes relative to the immediately preceding version of the claims. For each currently amended claim that is set out below, please enter the amended claim as a substitute for the previous version.

1. (canceled)
2. (currently amended) A method for testing performance of a server running a chosen computing application, wherein the server communicates with a client and a computing operation performed by the client resides in an application layer that communicates with a middleware layer on the client, the method comprising the steps of:
  - (a) emulating a plurality of individual client computing stations by a client emulation server, wherein a computing operation performed by such an emulated client resides in an application layer that communicates with a middleware layer on the emulated client;
  - (b) forming, on the client emulation server, a workload execution definition file referencing a first collection of a number of live maps, wherein such a live map includes i) identification of an application layer transaction for actual processing by the a tested server running a chosen computing application, and ii) data for the chosen application, including data formed at the emulated client application layer, and wherein the chosen computing application of the transaction for such a live map is the same for each of the live maps in the collection;
  - (c) passing the collection from such a the-client application layer to such a the-client middleware layer;
  - (d) reading, in response to the workload execution definition file by a number X of instances of a map sender program running on the client emulation server, the first collection of live maps;
  - (e) transmitting, a number of instances of the collection of live maps to the tested server as a processing load by the respective map sender program instances, so that the number of transmitted instances of the collection of live maps corresponds to the number X of instances of the map sender program; a first processing load from the client to the server running said

Docket JP919990715US

**BEST AVAILABLE COPY**

Appl. No.: 09/438,645

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computing application, wherein the processing load includes the first collection of the number of said live maps for a plurality of said transactions;

(fd) measuring one or more performance criteria resulting from said tested server actually processing said load, wherein the measuring of the one or more performance criteria includes: i) time stamping a record of such a live map by the client before the transmitting of such a processing load to the server and ii) receiving, by the client, a reply map for the live map from the server after the server processes the load, wherein the reply map includes server processing time measured by the server so that the client is able to compute so that elapsed times can be determined from a client perspective and compare ones of the client-perspective elapsed times to ones of the server processing times for specific ones of the application layer transactions to determine server and network latency; and

(ge) changing, by the client emulation server, the first collection of live maps and the number X of instances of map sender programs to a number Y, in order to selectively vary processing loads of the tested server, wherein the changing includes changing the number of said live maps and types of said transactions in the first collection of live maps;

(h) reading the changed collection of live maps by the Y instances of the map sender program; and

(i) transmitting, by the Y instances of the map sender program, a next processing load from the client to the server, so that the next processing load includes ing Y instances of the changed collection of live maps, in order to selectively vary said processing loads, wherein the changing includes changing the number of said live maps and types of said transactions in the first collection of live maps transmitted to said server; and

(j) repeating, wherein said measuring step (fd) is repeated for the next processing load.

3. (currently amended) The method of claim 2, comprising the further step of:

(kf) comparing said performance criteria against predetermined performance measures to determine whether said tested server's capacity is has satisfactory capacity.

4. (previously presented) The method of claim 3, whereby said performance criteria include average response time for a transaction within such a load.

Docket JP919990715US1

**BEST AVAILABLE COPY**Appl. No.: 09/438,645  
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5. (currently amended) The method of claim 3, whereby said performance criteria include the proportion of tested server CPU time taken by a transaction of such a load.

6. (currently amended) The method of claim 1, wherein step (f) comprises, for each transaction within said load, returning a result to said client emulation server; and measuring, by said client emulation server or by said tested server, the one or more performance criteria responsive to the processing of said load by said tested server.

7 through 9. (canceled)

10. (currently amended) A system for testing server performance, said system comprising:

- (a) a tested server running a chosen computing application;
- (b) a client emulation server("client") representing for emulating a plurality of individual client computing stations, wherein a computing operation performed by the such an emulated client resides in an application layer that communicates with a middleware layer on the emulated client, said client emulation server including a workload execution definition file referencing a first collection of a number of live maps, the live maps of the collection being passed from the such an emulated client application layer to the such an emulated client middleware layer, wherein such a live map includes i) identification of an application layer transaction for actual processing of the transactions by the tested server running the chosen computing application, and ii) data for the chosen application, including data formed at the emulated client application layer, and wherein the chosen computing application of the transaction for such a live map is the same for each of the live maps in the collection; and
- (c) a communications connection between said client emulation server and said tested server; and wherein said client is operable to transmit a first processing load to said server, via said communications connection,
- (d) a number X of instances of a map sender program on the client emulation server, wherein the map sender program instances read the first collection of live maps in response to the workload execution definition file, and send, via said communications connection, respective instances of the first collection of live maps to the tested server as a processing load, so that the

Docket JP919990715US1

Appl. No.: 09/438,645  
Filed: November 12, 1999

BEST AVAILABLE COPY

number of sent instances of the collection of live maps corresponds to the number X of instances of the map sender program; the processing load including the first collection of said live maps for a plurality of said transactions;

wherein said tested server is operable to actually process said load and wherein the system is operable to measure one or more performance criteria resulting from the tested server processing said load;

wherein the measuring of one or more performance criteria includes i) time stamping a record of such a live map by the client before the transmitting of such a processing load to the server and ii) receiving, by the client, a reply map for the live map from the server after the server processes the load, wherein the reply map includes server processing time measured by the server so that the client is able to compute elapsed time from a client perspective and compare ones of the client perspective so that elapsed times can be determined to ones of the server processing times for specific ones of the application layer transactions to determine server and network latency; and

wherein, in order to selectively vary processing loads of the tested server, said client emulation server is further operable to change the number X of instances of the map sender program to a number Y and change the first collection of live maps and transmit, by the Y map sender program instances, a next processing load to the tested server, the next processing load including Y instances of the changed collection of live maps, in order to selectively vary said processing loads, wherein the changing includes changing the number of said live maps and types of said transactions in the first collection of live maps, and the server or client being is operable to repeat the measuring for the next processing load.

11. (canceled)

12. (currently amended) The system of claim 10, wherein said tested server compares said measured performance criteria against predetermined performance measures to determine whether the tested server has satisfactory capacity.

Docket JP919990715US1

Appl. No.: 09/438,645  
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13. (currently amended) The system of claim 12, wherein said tested server stores a file of said performance data measures.

14. (currently amended) The system of claim 13, wherein said client emulation server stores a file of said performance data measures.

15. (previously presented) The system of claim 12, wherein said performance data criteria includes the average response time for a transaction within one of said loads.

16. (currently amended) The system of claim 12, wherein said performance data criteria includes the proportion of tested server CPU time taken by such a transaction of said loads.

17. (currently amended) The system of claim 12, wherein said tested server has connection to one or more database servers, said database servers being operable to execute portions of said load transactions.

18. (currently amended) The system of claim 12, wherein said tested server comprises a plurality of servers, and each of said server plurality has connection to one or more database servers, said database servers being operable to execute portions of said load transactions.

19 through 21. (canceled)

**BEST AVAILABLE COPY**

**BEST AVAILABLE COPY**  
Docket JP919990715US1

Appl. No.: 09/438,645

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22. (currently amended) The system of claim 10, said system comprising:  
at least one database in communication with said tested server.

23 through 27. (canceled)

28. (new) The method of claim 2, wherein in step (f) the time stamping of the record includes time stamping the record by the client emulation server before the transmitting of such a processing load to the tested server, and the measuring of one or more performance criteria includes receiving, by the client emulation server, a reply map for the live map from the tested server after the tested server processes the load, wherein the reply map includes tested server processing time measured by the tested server so that the client emulation server is able to compute elapsed time from a client perspective and compare ones of the client-perspective elapsed times to ones of the tested server processing times for specific ones of the application layer transactions to determine tested server and network latency.

29. (new) The system of claim 10, wherein the time stamping of the record includes time stamping the record by the client emulation server before the transmitting of such a processing load to the tested server, and the measuring of one or more performance criteria includes receiving, by the client emulation server, a reply map for the live map from the tested server after the tested server processes the load, wherein the reply map includes tested server processing time measured by the tested server so that the client emulation server is able to compute elapsed time from a client perspective and compare ones of the client-perspective elapsed times to ones of the tested server processing times for specific ones of the application layer transactions to determine tested server and network latency.